LISTING OF THE CLAIMS

1. (Canceled)

2. (Canceled)

3. (Canceled)

4. (Canceled)

4. (Canceled)

6. (Canceled)

7. (Canceled)

8. (Canceled)

9. (Canceled)

10. (Canceled)

11. (Canceled)

12. (Canceled)

13. (Canceled)

14. (Canceled)

15. (Previously Presented) A system for the enhancement of physiological signals for the measurement of blood oxygen in a subject, the system comprising:

first and second light sources to direct light toward the subject, said first and second light sources producing first and second light signals of first and second wavelengths, respectively;

a light detector positioned to detect said first and second light signals after interaction with the subject and to generate first and second signals indicative of an intensity of said first and second detected light signals, respectively, said first generated

signal having a first portion arising from light transmitted from said first source and a second portion arising from a first interference source; said second generated signal having a first portion arising from light transmitted from said second source and a second portion arising from a second interference source;

an adaptive signal processor having a signal input coupled to said light detector to receive said first generated signal, an adaptive filter having an input to receive a reference signal, and an output, and an error output to generate an error signal, wherein said error output is coupled to said adaptive filter to adjust said adaptive filter so that a function of said error signal has a minimum;

wherein said first and second portions of said first and second generated signals and a first ratio constant have a defined mathematical relationship;

a reference signal generator to generate said reference signal based on a possible value of said first ratio constant; and

a peak detector to receive an output signal from said adaptive signal processor and determine a calculated value for said first ratio constant corresponding to a first peak value of said output signal over a predetermined range of possible ratios, said reference signal generator generating said first portion of said first detected signal and said first portion of said second detected signal based on said mathematical relationship and said calculated value of said first ratio constant.

16. (Previously Presented) The system of Claim 15 wherein said output signal received by said peak detector is selected from a set of output signals comprising approximations to said first and second signal portions of said first and second signals, wherein said error output and said adaptive filter output generate output signals of said set.

17. (Previously Presented) The system of Claim 15, further including an oxygen saturation calculating circuit to determine blood oxygen saturation of the subject based on said calculated value of said first ratio constant.

18. (Previously Presented) The system of Claim 15, further including a data table interrelating said calculated value of said first ratio constant with blood oxygen saturation level.

19. (Previously Presented) The system of Claim 15 wherein said first and second wavelengths are in the red and infrared wavelength range, respectively.

20. (Previously Presented) The system of Claim 15 wherein said mathematical relationship has the following form:

$$s_2 = (S_{red} - r_v S_{IR})/(r_a - r_v) \text{ and } s_1 = r_a s_2$$

where S_1 corresponds to said first portion of said first generated signal, S_{red} corresponds to said first generated signal, including said first and second portions of said first generated signal, S_{IR} corresponds to said second generated signal, including said first and second portions of said second generated signal, r_a is said first ratio constant and corresponds to a ratio of said first portion of said first generated signal to said first portion of said second generated signal, and r_v is a second ratio constant and corresponds to a ratio of said second portion of said first generated signal to said second portion of said second generated signal.

21. (Previously Presented) The system of Claim 15 wherein said mathematical relationship has the following form:

$$s_2 = (S_{red} - r_v S_{IR})/(r_a - r_v)$$

where s_2 corresponds to said first portion of said second generated signal, S_{red} corresponds to said first generated signal, including said first and second portions of said first generated signal, S_{IR} corresponds to said second generated signal, including said first and second portions of said

second generated signal, r_a is said first ratio constant and corresponds to a ratio of said first portion of said first generated signal to said first portion of said second generated signal, and r_v is a second ratio constant and corresponds to a ratio of said second portion of said first generated signal to said second portion of said second generated signal.

22. (Previously Presented) A method for the enhancement of physiological signals for the measurement of blood oxygen in a subject, the method comprising the steps of:

directing light from first and second light sources of different wavelengths toward the subject;

detecting signals from said first and second light sources after interaction with the subject and generating first and second signals corresponding to an intensity of said first and second detected signals, respectively, said first generated signal having a first portion arising from light transmitted from said first source and a second portion arising from a first interference source, said second generated signal having a first portion arising from light transmitted from said second source and a second portion arising from a second interference source;

coupling said first generated signal to a signal input of an adaptive signal processor having an adaptive filter having an input to receive a reference signal, and an output, and an error output generating an error signal wherein said error signal is coupled to said adaptive filter to adjust said adaptive filter so that a function of said error signal has a minimum;

coupling an output signal from said adaptive signal processor to a peak detector and calculating a first ratio value corresponding to a first detected peak value of said error signal over a predetermined range of possible ratio values;

generating a first reference signal based on a mathematical relationship of said first and second portions of said first and second generated signals, and said first ratio value; and

coupling said first reference signal to said adaptive filter input wherein said filter output generates an estimate of said first portion of said first generated signal.

23. (Previously Presented) The method of Claim 22 wherein said output signal from said adaptive signal processor is said error signal and said calculated first ratio value is based on said first detected peak value in said error signal.

24. (Previously Presented) The method of Claim 22 wherein said output signal from said adaptive signal processor is derived from said adaptive filter output and said calculated first ratio value is based on said first detected peak value in said output signal derived from said adaptive filter output.

25. (Previously Presented) The method of Claim 24, further including the step of generating an approximation to said first portion of said second generated signal based on said mathematical relationship and said calculated first ratio value.

26. (Previously Presented) The method of Claim 25 wherein said first ratio value is a ratio of said first portion of said first generated signal to said first portion of said second generated signal.

27. (Previously Presented) The method of Claim 22, further including the step of determining a blood oxygen saturation level of the subject based on said calculated first ratio value.

28. (Previously Presented) The method of Claim 22, further including the step of determining a blood oxygen saturation level of the subject using a data table interrelating said calculated first ratio value with blood oxygen saturation level.

29. (Previously Presented) The method of Claim 22 wherein said mathematical relationship has the following form:

$$s_2 = (S_{red} - r_v S_{IR})/(r_a - r_v) \text{ and } s_1 = r_a s_2$$

where S_1 corresponds to said first portion of said first generated signal, S_{red} corresponds to said first generated signal, including said first and second portions of said first generated signal, S_{IR} corresponds to said second generated signal, including said first and second portions of said second generated signal, r_a is said first ratio constant and corresponds to a ratio of said first portion of said first generated signal to said first portion of said second generated signal, and r_v is a second ratio constant and corresponds to a ratio of said second portion of said first generated signal to said second portion of said second generated signal.

30. (Previously Presented) The method of Claim 22 wherein said mathematical relationship has the following form:

$$s_2 = (S_{red} - r_v S_{IR})/(r_a - r_v)$$

where S_2 corresponds to said first portion of said second generated signal, S_{red} corresponds to said first generated signal, including said first and second portions of said first generated signal, S_{IR} corresponds to said second generated signal, including said first and second portions of said second generated signal, r_a is said first ratio constant and corresponds to a ratio of said first portion of said first generated signal to said first portion of said second generated signal, and r_v is a second ratio constant and corresponds to a ratio of said second portion of said first generated signal to said second portion of said second generated signal